

**PUBLIC FACILITIES PLAN
FOR THE
CITY OF BROOKINGS AND THE URBAN GROWTH AREA**

**Adopted on January 24, 2011
by Ordinance 11-O-678**

(This repeals the previous Public Facilities Plan most recently revised by Ord. 09-O-626)

City of Brookings
Public Facilities Plan

ORDINANCE	DATE ADOPTED	EFFECTIVE
02-O-548	Aug 30, 2002	Sept 29, 2002
09-O-626	Jan 12, 2009	Jan 12, 2011
11-O-678	Jan 24, 2011	Feb 23, 2011

PUBLIC FACILITIES PLAN

CITY OF BROOKINGS WATER SYSTEM

The City of Brookings acquired the water system serving property within the City in 1973 and operates the water system as a City business enterprise. The City has made substantial improvements to the water system over the years.

The water enterprise consists of the following operating systems:

Source of Supply: The locations where the City takes or has the right to take water for municipal purposes, and the system for transmission of the water taken from these locations to the water treatment plant and distribution system.

Treatment: Filtering and chemically treating water from the sources of supply to assure that the water meets safe drinking water standards.

Distribution: A system of pipes that delivers water from the treatment plant to storage reservoirs, fire hydrants and individual properties for domestic and industrial use. Distribution includes operation and maintenance of water usage meters.

Management and Customer Service: Overall management of the water enterprise, engineering, planning, meter reading, billing/collections and customer service (new connections, turn-on/turn off, etc).

WATER SOURCE

Following is the current status of the City's various water right development applications and certificates.

January 27, 2010

City of Brookings Water Rights Summary

City of Brookings Municipal Supply Water Rights

<i>Application</i>	<i>Permit / Certificate</i>	<i>Type of Use</i>	<i>Source</i>	<i>Priority Date</i>	<i>Rate (cfs)</i>	<i>Volume (AF)</i>	<i>Point of Diversion (POD) Location</i>	<i>Status</i>
S-41805	S-31293 N/A	Municipal	Chetco River	1/22/1966	6.61		Ranney Collector Well	Development timeline expired 10/1/1999; currently in extension process at OWRD.
S-37091	S-27610 83682	Municipal	Chetco River	9/14/1961	4.00		Ranney Collector Well	In use.
G-5869	G-5601 64614	Municipal		8/14/1972	6.00		River Well #1	Currently not in use.
R-41870	R-4720 46860	Municipal	Ferry Creek	2/10/1966		167.40	Ferry Creek	Water being stored.
S-41871	S-31224 46861	Municipal	Ferry Creek Reservoir	2/10/1966		167.40	Ferry Creek Reservoir	Water released from reservoir, not currently being used for potable supply.
S-22928	S-18123 20734	Municipal	Ransom Creek	2/24/1948	0.53			Currently not in use.
Total:					17.14	334.80		

City of Brookings Irrigation Water Rights

<i>Application</i>	<i>Permit / Certificate</i>	<i>Type of Use</i>	<i>Source</i>	<i>Priority Date</i>	<i>Rate (cfs)</i>	<i>Volume (AF)</i>	<i>POD Location</i>	<i>Status</i>
S-71042	S-51383 N/A	Primary irrigation of 180.3 acres on golf course	Chetco River	12/12/1990	1.00		S. bank Chetco River near Freeman property	Use is limited by permit to March 1 through June 30. Development timeline expired 10/1/2002; no extension application pending. Currently not in use and no POD constructed.
R-73396	R-11535 N/A	Storage of water in ten reservoirs for supplemental irrigation on golf course	Chetco River	5/13/1993		62.30	S. bank Chetco River near Freeman property	Development timeline expired 10/1/2002; no extension application pending. Currently not in use and no POD constructed. Numerous permit conditions.
S-73397	S-51595 N/A	Use of stored water from ten reservoirs for supplemental irrigation on golf course	Ten Reservoirs, tributaries of Chetco River	5/13/1993		62.30	Reservoirs on golf course	Development timeline expired 10/1/2002; no extension application pending. Currently not in use and no POD constructed. Numerous permit conditions.
Total:					1.00	124.60		

Additional Water Rights Identified in October 2007 HGE Water System Master Plan Update'

<i>Application</i>	<i>Permit / Certificate</i>	<i>Type of Use</i>	<i>Source</i>	<i>Priority Date</i>	<i>Rate (cfs)</i>	<i>Volume (AF)</i>	<i>POD Location</i>	<i>Status</i>
S-3151	S-1740 2078	Domestic and Industrial / Manufacturing	Ferry Creek	8/22/1913	3.00			Currently not in use.
R-5114	R-372 1407	Domestic	Ferry Creek	8/9/1916		1680.00		Currently not in use.
R-5705	R-408 2071	Domestic	Ferry Creek	8/25/1917		28.00		Currently not in use.
S-7364	S-4674 4953	Domestic and Industrial / Manufacturing	Joe Hall Creek	6/23/1920	2.50			Currently not in use.
Total:					5.50	1708.00		

Currently, the Chetco River supplies 100 per cent of the City's water needs through a Ranney type intake collector located approximately 4 miles upstream from the Highway 101 bridge. The pump station at this point of diversion has a rated capacity of 5.4 million gallons per day (mgd). The City installed a new 16-inch raw water line from the point of diversion to the treatment plant in 2008. With this addition, the system now has the capacity to deliver 3.6 mgd to the treatment plant.

In 2008, the City received Certificate of Water Right (Permit 27610) for 4.0 cfs at the above referenced intake. In 2010, the City submitted a claim of beneficial use to support its partial perfection application (Permit S-31293) for 1.54 cfs at the above referenced intake.

WATER TREATMENT

The water treatment plant, installed in 1976, is a Neptune Microfloc Aquarius Model AQ-300 that utilizes the conventional rapid sand filtration treatment process. The plant consists of two identical, side-by-side units with a combined capacity of approximately 2.6 mgd.

WATER DISTRIBUTION

The main line distribution system consists of approximately 26.5 miles of pipe ranging in size from 2 to 16 inches. Pipe materials vary with the most common types being asbestos cement (AC) and polyvinyl chloride (PVC). The distribution system is over-extended in the higher elevation portions of the service area and is not capable of delivering fire flows in some areas.

WATER USAGE

Calendar 2009 water production data shows that the average daily water demand is 1,059,000 gallons with the peak day demand being 2,055,000 gallons. Using an estimate of 6,470 persons for the current population, the average daily water usage per person would be 164 gallons, with a peak demand of 318 gallons per person.

The City began offering water conservation incentives to customers in 2007, and has reduced its unaccounted-for water usage from 17% in 2007 to 13.5% in 2009.

FIRE FLOWS

The water system must offer sufficient capacity to furnish water for firefighting while maintaining adequate flows for domestic, commercial and industrial demands. In addition, the required fire flow must be delivered at an accepted residual pressure, which is 20 psi. The City of Brookings has adopted the Oregon Fire Code. The Oregon Fire Code provides the minimum fire flow standard applied to new development. A matrix used to determine fire flow requirements can be found in Oregon Fire Code, Appendix B, Table 105.1- Minimum required fire flow and flow duration for buildings. There is no community-wide standard, although a basic fire flow of 1,500 gpm for a two hour duration is a minimum in the Oregon Fire Code.

WATER STORAGE

With the completion of the 1.6 million gallon Seacrest reservoir in 2009, the current available storage is 3.6656 million gallons, or 1.78 times the peak day demand. The sizing of the Seacrest reservoir was reduced from a proposed 2.0 mg due to site constraints. The City plans to include the remaining 400,000 gallon capacity in a future project near the Brookings airport.

WATER SYSTEM MASTER PLAN

The City adopted a Water System Master Plan Update in 2007, which also serve as the City's Water Conservation Management Plan. These Plans are incorporated herein by reference.

Harbor Water People's Utility District

WATER SOURCE

Currently the Chetco River supplies the Harbor Water Peoples Utility District (HWPUD) water needs. The river intake is a Ranney collector with a rated capacity of 6 million gallons per day. Four pumps serve the intake; each rated at 2.4 mgd capacity. The pumps alternate, with two operating together to handle peak demands.

The HWPUD currently holds two surface water rights from the Chetco River and has two ground water sources. These are summarized in the following table.

Harbor Rural Water District Water Rights			
Source	Priority Date	Amount	Amount
Chetco River	1966	3.500 cfs	2.26 mgd
Chetco River	1980	7.00 cfs	4.53 mgd
Well G3240	1966	3.50 cfs	2.26 mgd
Well G9438	1980	7.00 cfs	4.53 mgd
Total		21.00 cfs	13.58 mgd

WATER TREATMENT

The Ranney intake is considered equivalent to a ground water system. For this reason, water treatment is not practiced.

WATER DISTRIBUTION

The distribution system is an extensive loop system that extends from the Chetco River to the California border, and consists of approximately 50-55 miles of pipe ranging in size from 2 to 16 inches. Pipe materials vary with the most common types being asbestos cement (AC) and polyvinyl chloride (PVC), and ductile pipe.

WATER USAGE

Current water production data shows that the average daily water demand is 700,000 gallons with the peak day demand being 1,700,000 gallons. Serving an estimated 2,500 persons, the current population, the average daily water usage per person is approximately 280 gallons, with a peak demand of 680 gallons.

FIRE FLOWS

The water system must offer sufficient capacity to furnish water for fire fighting while maintaining adequate flows for domestic, commercial, and industrial demands. Also the required fire flow must be delivered at an accepted residual pressure which is 20 psi. The HWPUD has sufficient storage to meet a demand of 1500 gpm for two hours where necessary. The necessary storage

to meet that requirement would be 180,000 gallons. HWPUD has the capacity to deliver fire flows.

WATER STORAGE

There are eleven water storage reservoirs in the HWPUD, which give a total storage capacity of 2,060,000 gallons. The following table summarizes the current water storage for the district.

Harbor Water District Storage			
Reservoir	Bottom Elevation	Overflow Elevation	Storage Capacity
Crown Terrace 1	525.5'	537.5'	10,000 gal
Crown Terrace 2	525.5'	537.5'	10,000 gal
Crown Terrace 3	795'	807'	10,000 gal
Crown Terrace 4	795'	807'	10,000 gal
Crown Terrace 5	1,025'	1,037'	10,000 gal
Crown Terrace 6	1,025'	1,037'	10,000 gal
Hallway 1	201.36'	234.81'	750,000 gal
Hallway 2	203.62'	234.81'	500,000 gal
Coleman	355.18'	388.60'	300,000 gal
Benham	355.18'	386.60'	200,000 gal
Freeman	203.32'	234.74'	250,000 gal
TOTAL			2,060,000 gal

The required storage for the HWPUD is shown in the following table.

Harbor Water Storage Estimate		
Peak Day Demand	1,700,000 gallons	
Twice the Ave Day Demand	1,400,000 gallons	
Larger of the above two		1,700,000 gallons
Fire Storage	1500 gpm x 2hrs	180,000 gallons
Equalization Storage	20% peak	340,000 gallons
	Required Storage	2,220,000 gallons

HARBOR WATER PUD MASTER PLAN

Harbor Water PUD adopted a Master Plan in December, 2000 that is incorporated herein by this reference.

CITY OF BROOKINGS WASTEWATER SYSTEM

The original Brookings sewer system was constructed about 1916 and service was initially limited to the downtown area. The City assumed operation of the sewer system soon after incorporation in 1951. The City operates the wastewater system as a City business enterprise. The wastewater enterprise consists of the following operating systems:

COLLECTION

The City accepts domestic sewage from property in the service area that is connected to the sanitary collection system, and transmits the sewage to the wastewater treatment plant. The collection function includes the operation of sewage lift stations installed at various locations within the collection system to assist the flow of sewage to the treatment plant.

Currently, the collection system consists of a network of 6, 8, 10 and 12-inch mains connected to 18 and 21-inch interceptors and lift stations. There are approximately 32.7 miles of 6-inch to 21-inch gravity mains and 2.75 miles of 4-inch to 14-inch diameter force mains in the collection system. The system provides service connections to individual properties within the service area. The interconnection with the HSD also functions as a part of the collection system.

LIFT STATIONS

The City currently operates 13 lift/pump stations located to serve areas which cannot be served with gravity-fed sewer mains.

TREATMENT

Treatment involves removal of solids from the sewage received at the wastewater treatment plant, and clarification of processed solids after biological treatment and disinfect using U.V. bulbs in the effluent stream, to meet federal and state standards prior to discharge into the ocean. Treatment includes the processing, reprocessing and disposal of solids removed from the sewage.

The wastewater treatment plant has been located at Chetco Point since the early 1950's. Major modifications to the plant were made in 1973, 1991, and 2000.

Treated water, or effluent, produced by the wastewater treatment plant is discharged to the Pacific Ocean. The Oregon Department of Environmental Quality establishes discharge limitations for discharge to ocean waters. The residual of the solids removal process, or sludge, is currently taken from the bio-solids storage tank and transported to a processing facility in Grants Pass during the summer months. Approximately 1,598,040 gallons of sludge was transported for disposal in 2009. A new Class B sludge dewatering facility is planned for construction during 2010-11 which will eliminate the need for sludge trucking to Grants Pass.

RELATIONSHIP TO HARBOR SANITARY DISTRICT

In 1976, the Harbor Sanitary District was formed to serve an area just south of the City. The City and HSD have entered into a series of intergovernmental agreements whereby the City accepts sewage from HSD for treatment. See below for a description of the HSD system.

BROOKINGS WASTEWATER MASTER PLAN

The City adopted a Wastewater Facilities Master Plan in March, 2008. That Master Plan is incorporated herein by reference. A detailed discussion of the treatment system and plant capacity can be found in the Plan. Until sewer service can be extended to properties, interim urban-level treatment systems may be allowed only if specifically provided for in master plans which set forth appropriate standards and conditions and which have been adopted as post-acknowledgement plan amendments or periodic review work task elements.

HARBOR SANITARY DISTRICT WASTE WATER SYSTEM

The community of Harbor is an unincorporated residential, commercial, and industrial area south of the Chetco River and the City of Brookings. The Harbor Sanitary District (HSD) has served this area since June 1976. The HSD operates only a collection system. Wastewater is piped to the Brookings wastewater treatment plant for treatment. The area's land use is predominantly residential, but a regional shopping center and an extensive commercial and industrial complex surround the Brookings-Harbor Boat Basin. The Harbor Bench area south of Harbor, an area experiencing steady growth, currently is out of the sewer service area; however, it is an area that potentially may become part of the service area. In 1979 the Oregon Health Division directed the HSD to annex an adjoining area, the Oceanview Mobile Home Estates, due to wastewater treatment concerns.

POPULATION

The following population data was taken from the "City of Brookings Comprehensive Utilities Plan" dated September 1981. Population projections were based on the 1970s, a growth period.

Harbor Sanitary District Population Growth				
Year	1980	1990	2000	2010
Population	1,968	2,645	3,555	2,770

COLLECTION SYSTEM

In 1976, the HSD was formed. The collection system consists of four pump stations and a network of gravity lines. Wastewater is pumped across the Chetco River to the south portion of the City of Brookings service area. There a 20-inch gravity main conveys the wastewater to the Brookings treatment plant. The daily flow rate is approximately 0.28 mgd.

The collection system consists of 16.5 miles of 8-inch and 12-inch transite pipe.

PUMP STATIONS

Flows from the entire Harbor collection system enter HSD pump station No. 14. Discharge from this station is to the Brookings WWTP by means of an 8-inch force main over the Chetco River or a 12-inch force main under the Chetco River. Space for additional force mains is available. Pump station No. 14 is rated at 2,000 gpm and 125 feet. The other three pump stations are small and serve limited areas.

HARBOR SANITARY DISTRICT MASTER PLAN

HSD plans to complete a Master Plan during the winter of 2010.

Until sewer service can be extended to properties, interim urban-level treatment systems may be allowed only if specifically provided for in master plans which set forth appropriate standards and conditions and which have been adopted as post-acknowledgement plan amendments or periodic review work task elements.

CITY OF BROOKINGS STORM DRAINAGE

The City of Brookings operates a storm drainage system within the city boundaries. Drainage basins flow to the ocean or the Chetco River. Generally local area flows are conveyed via pipes to discharge points at surface drainage ways. The majority of the existing piping system is located in the western old portions of the city draining to the Chetco. Highway 101 presents a major flow obstruction to natural drainage pattern, requiring culvert crossings. Some limited historical flooding has occurred, but the problems are related to site-specific causes.

CURRY COUNTY

Curry County services all public storm drainage in the study areas north and south of the Chetco outside City limits. The service level is mainly rural road maintenance that consists of ditch culvert cleaning associated with road maintenance. All other drainage features are privately owned. The Harbor Bench area, which is outside the urban growth area, has experienced flooding and erosion due to upstream growth and diversion of flows due to culvert placement.

CITY/ COUNTY STORM DRAINAGE MASTER PLAN

On January 12, 2009, the City and the County adopted the "Storm and Surface Water Facilities Plan for Brookings-Harbor Area." In the Plan are design and development standards and proposed improvements to the storm drainage facility. There are also maps depicting the various basin areas in City limits and the Urban Growth Area, hydrologic/ hydraulic analysis, and the discussion of the effects on specific areas in the Plan. The Plan is hereby incorporated by this reference.

The Storm and Surface Water facilities Plan for Brookings Harbor Area" contains the following policies:

- Low impact development is preferred.

- Negative impacts to natural watercourses are to be avoided.
- Piping of a natural watercourses is to be avoided, where practicable.
- Protection of ground water sources is critical.
- Proposed facilities should address water quality impacts and mitigation measures.
- Erosion and sediment must be controlled using the City, County, and Department of Environmental Quality requirements.
- Stormwater discharges shall be maintained at current levels.
- A public education program is recommended to disseminate information on the importance of preventing negative impacts from stormwater.

The “Storm and Surface Water Facilities Plan for Brookings-Harbor Area” contains specific design and development standards and proposed improvements to the storm drainage facility. To avoid adverse impacts created by development, the Plan contains five strategies to be generally utilized:

1. There should be no post-development net increase in storm drainage discharge downstream.
2. Low impact development practices as described in the 2007 “Storm and Surface Water Facilities Plan” shall be implemented.
3. The capacity of the downstream drainage infrastructure is improved to convey the increased flow. Usually this means constructing larger culverts and storm drains. Generally, the natural drainage channels are improved, but because of the study area’s proximity to the ocean and the steep rocky terrain, these channel improvements may not be necessary.
4. A regional detention facility is constructed to capture the additional runoff and release the flow at a slower natural rate. A regional facility is normally associated with a single drainage way or creek.
5. An onsite detention facility is constructed for each individual development. The goal for a regional or onsite detention facility is that the runoff from the post-development condition be reduced to flow equaling the pre-development condition.

The Harbor Hills Master Plan Area within the UGA is required to prepare a comprehensive surface water management plan prior to any land use approvals. The details required and the review and approval process are described in the “City of Brookings and Curry County Joint Management Agreement”, dated June 30, 2010.

APPENDIX A:
SPECIAL MASTERPLAN AREAS MAP

